Epi-on-the-Island

Survival Analysis

3-7 June 2019

Tentative Schedule

(Instructors: ID= Ian Dohoo; HS= Henrik Stryhn)

Day	Time	Lecture	Laboratory	Pages (VER2)	Pages (MER)
Monday	8:30 – 9:30	(ID) Introduction to the course, (ID) Introduction to survival data		468-473	502-507
	10:00 – 11:15 11:15 – 12:00	(ID/HS) Life tables, Kaplan-Meier (ID/HS) Introduction to Stata/R survival analysis software		473-480	507-514
	1:00 – 2:00		Life tables (#1a)		
	2:00 – 3:15 3:45 – 4:45	(HS) Hazard functions; Survival time distributions and models	Functions (#1b)	480-485	514-518
	4:45 – 5:30	Assisting students with preparing their data sets			
Tuesday	8:30 – 10:00 10:30 – 12:00	(ID) Cox semi-parametric models	Cox models (#2)	485-491	519-524
	1:00 – 2:00 2:00 – 2:45	(ID) Time-dependent variables	Time-dep. var. (#3)	491-494	524-527
	3:15 – 4:00 4:00 – 5:00	(ID) Cox model diagnostics	Diagnostics (#3)	492-503	527-536
	5:00 - 5:30	Assisting students to get started on their analysis			
Wed	8:30 – 10:00 10:30 – 12:00	(HS) Parametric models	Param. Models (#4)	503-510	536-544
	1:00 – 2:00 2:00 – 3:00	(HS) Clustering and frailty models	Frailty models (#5)	510-518	545-552

Day	Time	Lecture	Laboratory	Pages (VER2)	Pages (MER)
	3:30 – 4:30	(ID/HS) Advanced topics: • flexible parametric distrib. • multi-level frailty models		NA	NA
	4:30 – 5:30	Students free to work on own data			
Thu	8:30 – 10:00 10:30 – 12:00	(HS) Discrete time survival analysis	Discrete analysis (#6)	518-523	552-557
	1:00 – 2:30 2:30 – 3:15	(ID/HS) Advanced topics: • competing risk regression • interval censored models • joint models	Advanced methods (#7)	NA	NA
	3:45 – 4:30	Students free to work on own data			
	Evening	Course dinner			
Fri.	8:30 – 10:00	Case studies / Further topics			
	10:30 – 12:00		Students work on their own data		
	1:00 – 2:30	Presentations by students			
	3:00 – 4:15	Presentations by students, Course wrap-up			

Course Information

Text:

The text for the course will be *Veterinary Epidemiologic Research* (2009), 2nd edition (http://www.upei.ca/ver), or alternatively *Methods in Epidemiologic Research* (2012). Course participants will be provided with a printed coopy of the chapter of the (former) book that deals specifically with survival analysis upon request.

Software

The primary software for the course will be Stata (version 15). Comprehensive supplementary material will be provided for R software, based on standard R libraries.

Course Preparation

In order to get the maximum value out of the survival analysis course, we encourage students to bring their own data with them to the course. There will be time during the course to work on your own data and we will endeavour to have lots of help available in the lab sessions to expedite this process. The following actions are recommended:

1. **Prepare a 1 page description of your data / problem** using the template attached (next page). These will be copied at the beginning of the course and distributed to all course participants.

2. **Prepare your data (if you are bringing some)**: If you have data of your own which you would like to work on during the course, please bring a prepared dataset with you. Some suggestions for preparing the dataset are:

(a) one variable giving the survival and censoring times, and another binary variable indicating whether the corresponding time is a time-to-event or a time-to-censoring

(b) one record per observation at the lowest level of the hierarchy (e.g. if the dataset contained data from lactations within cows within herds, the dataset should have 1 record per lactation)

(c) make sure that each observation is uniquely identified

(d) identify the key variables of interest and create a dataset with just those variables in it (rather than bringing the whole dataset if it is very large)

(e) if there are a lot of missing values, you might want to prepare a dataset that consists of those observations for which complete data are available

(f) you can bring the data in any computer format you like, but we would suggest that some form of spreadsheet (e.g., Excel or Open Office Calc) would be the easiest to work with (larger files can be brought in any statistical package format – SAS, SPSS, Stata). If you bring the data in a spreadsheet, have the variable names in row 1 and the data immediately below (starting in row 2) - do not include anything else in the spreadsheet.

Survival Analysis Project

Name:
Project Title:
Background: (provide a brief description of the background to your study)
Time to event: (describe clearly what constitutes an event and why observations were censored, and how the respective times were measured)
Hypothesis: (what is the most important hypothesis you want to investigate)
Expectations: (what are your expectations in terms of results ... based on literature or previous work)
Levels of organization: (if multiple hierarchical levels of organization exist, describe those)
Key Predictor(s): (identify a minimum of one and a maximum of four important predictors in your study and if applicable their level in the hierarchy, e.g. farm level variable, cow level variable)

Copies of these sheets will be distributed to all course participants